

AFFINITIES OF THE FOSSIL WASP,
HOPLISIDEA KOHLIANA COCKERELL
(HYMENOPTERA: SPHECIDAE: SPHECINAE)

BY A. S. MENKE¹ AND A. P. RASNITSYN²

The fossil wasp, *Hoplisidea kohliana*, was described by Cockerell (1906) from a single specimen taken from the "Miocene" shales of Florissant, Colorado. These deposits are now regarded as Lower Oligocene (MacGintie, 1953). Cockerell placed *Hoplisidea* in the "Nyssonidae" and related it to the "Gorytinae." He compared it with *Gorytes mystaceus* (now *Argogorytes*) and *Gorytes quadrifasciatus*, and stated that it came closest to "*Hoplisus*" (now *Gorytes*) in hindwing venation and general habitus.

The specimen (MCZ type #2018) is a large wasp (20 mm long) preserved venter up (fig. 1). Unfortunately the antennae were not preserved. The mandibles are long and sickle-like. The occipital carina is a complete circle tangential with the hypostomal carina. One pair of wings is nearly intact—at least the venation is clear (fig. 2). The stigma is narrow and elongate. There are 3 submarginal cells, the second of which receives both recurrent veins. The basal vein of the forewing is interstitial with cu-a, and it meets the subcosta well basad of the stigma. There is a forewing cloud through the marginal and submarginal cell area. The hindwing media diverges from M + Cu at crossvein cu-a. Unfortunately, the anal area of the hindwing is missing. The thorax and underside of the head are covered with long setae indicating that the wasp was fairly hairy. Similar long setae are visible on the abdominal sterna, but on III-V they seem restricted to a transverse row near the apex of each segment. The legs appear smooth, without obvious serration, and are rather slender. The coxae and femora have long setae, and one dislocated tarsus is spinose. The coxae are contiguous. The number of midtibial spurs and claw details are unclear. The connection between the gaster and propodeum is not clearly visible, but based on the shape of segment I, there was evidently a short petiole (dotted

¹Systematic Entomology Laboratory, Agricultural Research Service, U.S.D.A., U.S. National Museum, Washington DC 20560

²Paleontological Institute, Academy of Sciences of the USSR, Moscow 117868.

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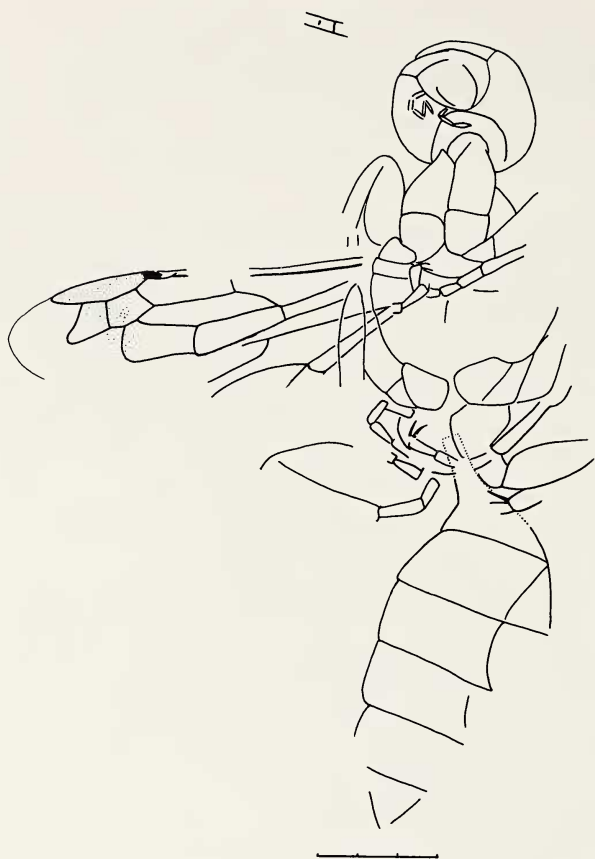


Fig. 1. Line drawing of type specimen of *Hoplisidea*. Scale = 3 mm.

lines on fig. 1 indicate probable petiole configuration). Only 6 gastral segments can be distinguished, but it is uncertain whether the specimen is a female.

Evans (1966) examined the type and discussed the wasp's probable affinities in some detail. He cast doubt on the fossil's relationship with the Gorytini because of wing venation (the position of the basal vein and divergence of the hindwing media). Evans suggested that the general wing pattern was more reminiscent of the family Tiphidae. He concluded that in general body form, hairiness, and forewing venation, *Hoplisidea* resembled males of the genus *Anthobosca*. It should be pointed out here that females of *Anthobosca*



Fig. 2. Photograph of wings of *Hoplisidea* with veins inked in for clarity.

After examining the type, we are struck by the similarity of its venation pattern and cell shape with members of the sphecid tribe Sceliphriini. The forewing cloud enhances this perception because species of some sceliphrin genera (*Podium*, *Trigonopsis*, *Penepodium* and a few *Chalybion*), are similarly endowed. Figure 18 B in Bohart and Menke (1976), which is of a species of *Sceliphron*, is quite similar to the forewing of *Hoplisidea*. There is congruence in have very stout fossorial legs; thus *Hoplisidea*, because of its slender appendages, would have to be a male. Evans pointed out that the hindwing venation of *Anthobosca* (media diverges well before crossvein cu-a) contradicted a relationship with *Hoplisidea*. To this we can add that *Anthobosca* males (as well as females) have serrate tibiae, but the fossil's legs are apparently smooth, although the teeth would be hidden when viewed from certain angles. But more importantly, after comparing the wings of *Hoplisidea* with *Anthobosca* males, we fail to see the resemblance suggested by Evans. The cell shape and termination point of the recurrent veins are quite different. On the other hand, according to Evans, there is apparently considerable variability of these characters within *Anthobosca*. Evans' closing comment was "I consider it much more probable that it [*Hoplisidea*] is a tiphiid wasp not unrelated to *Anthobosca*."

the long, narrow stigma and the shape of the submarginal cells. The forewings of other sceliphrin genera (*Chalybion*, *Podium*, *Trigonopsis*) are somewhat similar, but the 3rd submarginal cell is generally longer, and the shape of the 2nd varies. All of these wasps (except *Trigonopsis*) have long setae on the head and thorax. The hindwing venation of *Hoplisidea* is similar to the basic sceliphrin pattern: the media diverges at or very close to crossvein cu-a. The large, slender body of *Hoplisidea* and its sickle-like mandibles also agree with the character states of the Sceliphriini. The inability to discern the nature of the abdominal petiole is disconcerting, but it is clear that the petiole was short, about the length of the hindcoxa. The petiole is longer than the hindcoxa in most of the sceliphrin genera discussed above. On the other hand, in the most primitive members of the tribe such as *Stangeella* and *Chlorion*, the petiole is about as long as the hindcoxa. But the shape of the forewing submarginal cells in these genera is different from *Hoplisidea*. The preponderance of evidence suggests to use that *Hoplisidea* is most likely a sphecid wasp whose affinities are with the tribe Sceliphriini, rather than a tiphiid, but it does not appear to represent a living genus.

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